Sample Question Paper
Subject : Mathematics
Class: X : **2021-22**

Time: 2 hours **Maximum Mark: 50**

General Instruction:

(i) **All questions are Compulsory**
(ii) **The question papers consist of 20 questions divided into four sections-A, B,C ,D and E**
(iii) **Section -A contains 6 questions of 1 mark each.**
(iv) **Section –B contains 5 questions of 2 mark each.**
(v) **Section- C contains 4 questions of 3 marks each.**
(vi) **Section –D contains 3 questions of 4 marks each.**
(vii) **Section –E contains 2 questions of 5 marks each.**

Section –A

(Q no, 1 to 6 Carry 1 mark each)

1. Find the nature of the roots of the equation by factorization method:
   $2x^2 - 3x + 5 = 0$
2. If one zero of the polynomial $x^2 - 4x + 1$ is $2 + \sqrt{3}$, write the other zero.
3. 30th term of the 10 ,7, 4 ..... is
   (a) 97 (b) 77 (c) -77 (d) - 87
4. The length of the longest pole that can be kept in a room (12m x 9 m x 8m) is
   (a) 29m (b) 21m (c) 19m (d) 17m
5. If tangents PA and PB from a point P to a circle with centre O are inclined to each other at angle of 80^0 . then angle POA s equal to
   (a) 50^0 (b) 60^0 (c) 70^0 (d) 80^0
6. The formula area of sector of a circle is
   (a) πr^2 (b) $\frac{\pi}{4} r^2$ (c) $r\pi^2 h$ (d) $\frac{\pi}{360} r^2 \theta$

P.T.O

Section –B

(Q no, 7 to 11 Carry 2 mark each)

7. Find the roots of the following equation by factorisation .

   $2x^2 + x - 6 = 0$

8. How many three- digit numbers are divisible by 7?

   Or

   Find the sum of the odd numbers between 0 and 50

9. The 17 th term of an A.P exceeds its 10^{th} term by 7 . Find the common difference .

10. If $x = 3$ is one of the root of the equation : $x^2 - 2kx - 6 = 0$, the find the value of k.

11. Prove that the tangents drawn at the end of a diameter of a circle are parallel.

Section –C

(Q no,12 to 15 Carry 3 mark each)

12. Prove that the length of tangents drawn from external points to a circle is equal.

13. Find the value of p, so that the quadratic equation $p\,x\,(x-2)+6=0$ has equal roots

14. Two cubes each of volume 64 cm^3 are joined end to end .Find the surface area of the resulting cuboid.

15. The mean of the following distribution is 18. Find the missing frequency of the class 19-21

Class	11-13	13-15	15-17	17-19	19-21	21-23	23-25
frequency	3	6	9	13	f	5	4

Section –D

(Q no,16 to 18 Carry 4 mark each)

16. The angle of elevation of the top of the building from the foot of the tower is 30^0 and the angle of elevation of the top of the tower from the foot of the building is 60^0. If the tower is 50 m high , find the height of the building

17 . Metallic spheres of radii 6 cm , 8 cm and 10 cm , respectively , are melted to form a single solid sphere . Find the radius of the resulting sphere

18. The given table shows the ages of the patient admitted in a hospital during a year

Age in years	5-15	15-25	25-35	35-45	45-55	55-65
Number of patients	6	11	21	23	14	5

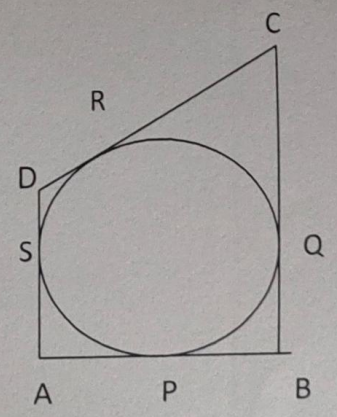
Find the mode.

Section –E

(Q no. 19 to 20 Carry 5 mark each)

19. In the given figure a quadrilateral ABCD is drawn to circumscribe a circle.

Prove that : AB + CD = AD + BC



20. Construct a tangent to a circle of radius 4 cm . from a point on the concentric circle of radius 6 cm and measure its length.

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